CHAPTER 12: IMAGE SCANNING SECTION

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1. Theory of Operation

1. Original Loading Mechanism

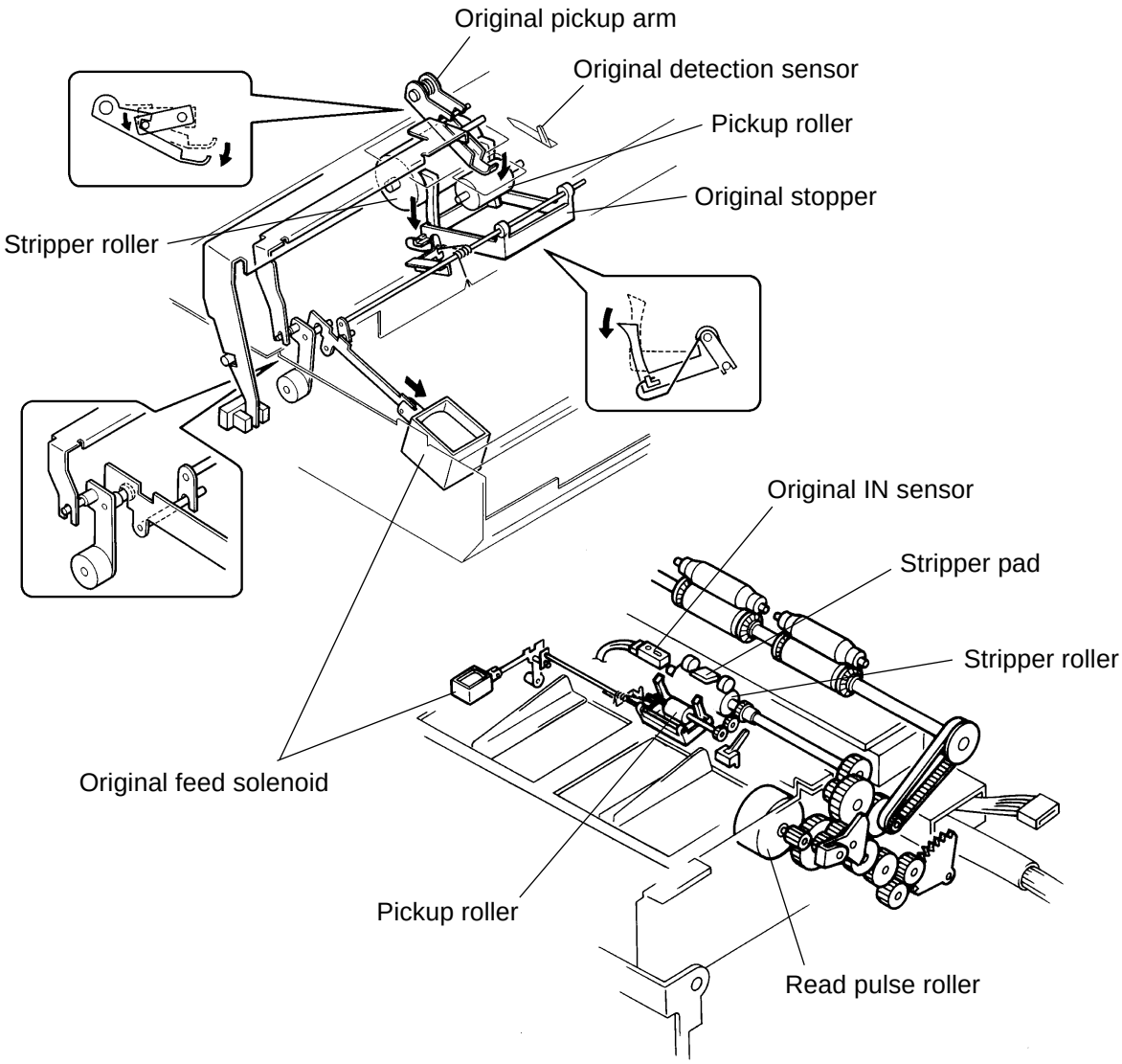
An original placed on the original tray is automatically fed and set in the ADF unit.

1. Shading Compensation

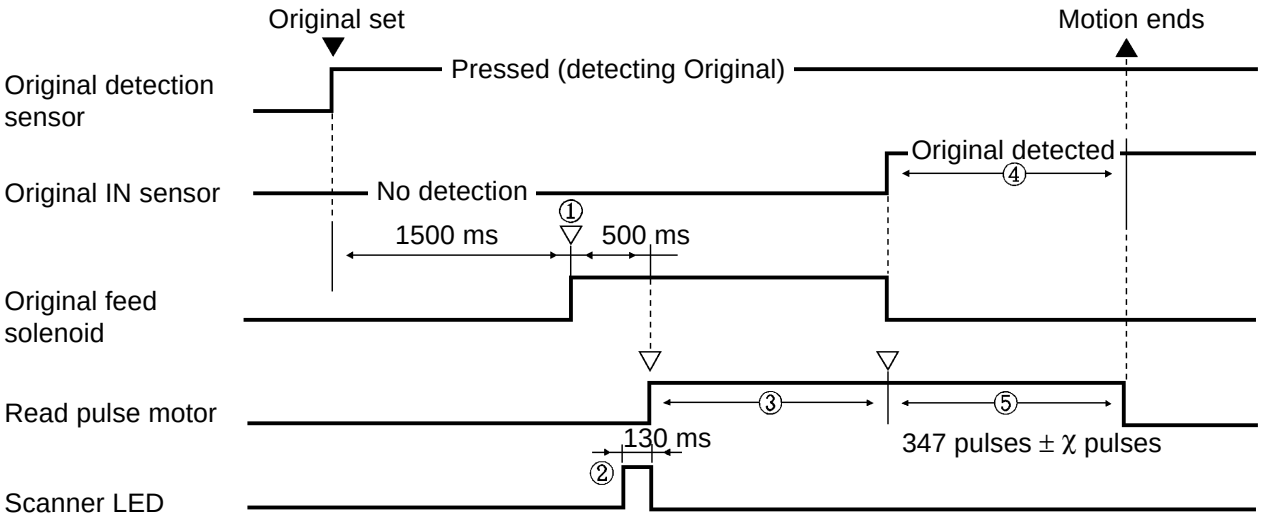
- The leading edge of the original placed on the Original tray activates the actuator of the Original detection sensor.
- When the Original detection sensor detects the original, the LED of the Image scanner turns ON and the shading compensation takes place.
- At the same time, the Original feed solenoid activates and pulls the Original stopper down to clear the way for the original.
  The original is now held in position by Original pickup arm which comes down when the solenoid is activated.

2. Original Loading in ADF

- After the shading compensation is done, the Read pulse motor activates to start feeding the original by rotating the Original pickup roller and Original stripper roller.
- The originals stacked on the Original tray are fed sheet by sheet into the ADF unit by the Stripper pad and Stripper roller.



Original Loading Timing Chart



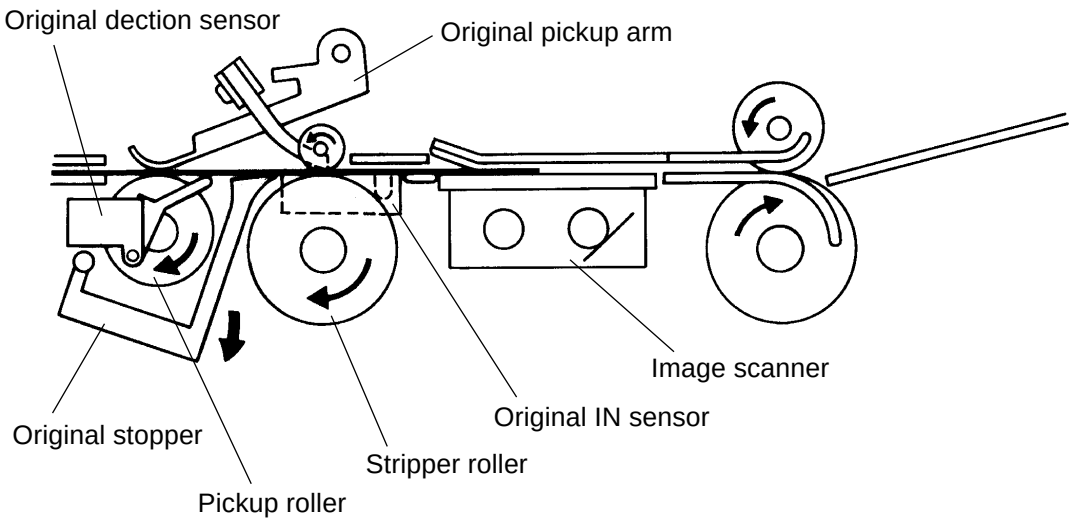
① Original feed solenoid activates with a small buzzer sound.

② The Scanner LED activates for shading compensation.

③ If the original IN sensor does not detect an Original within **1712 pulses** after the Read pulse motor activates, the machine assumes Original has jammed and indicates the message **[C 37]**, and turns off the Original feed solenoid and Read pulse motor.

④ If the Original IN senor detects the Original once, but then no longer detects the Original before the Read pulse motor turns OFF, the machine assumes Original has jammed and indicates the message **[C37]** and turns off the Read pulse motor.

⑤ The "χ" pulses can be adjusted by Memory Switch **No. 206** (Test Mode No. 206).



2. Original Scanning Mechanism

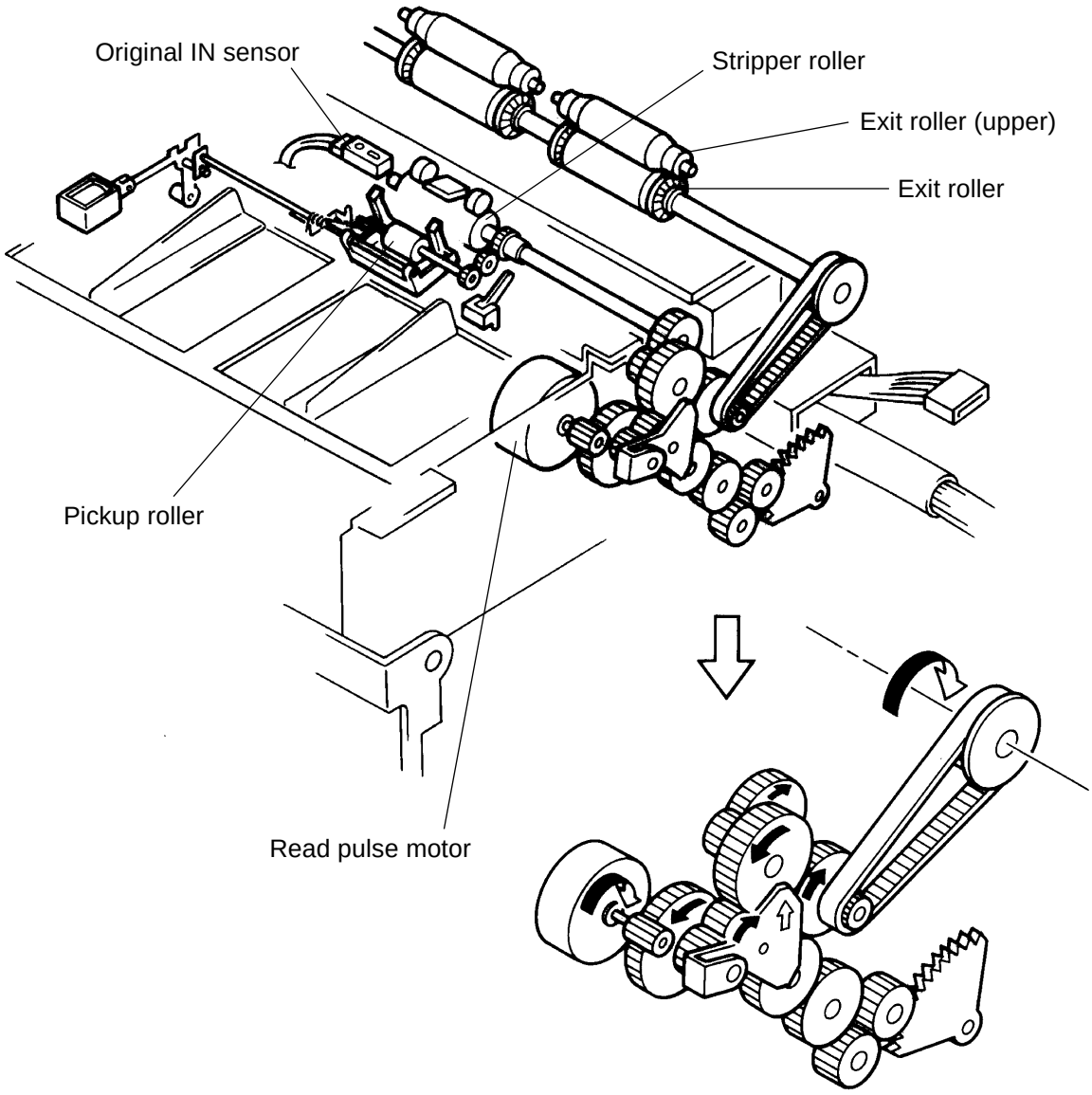
After the Original loading movement is completed, and START button is pressed, the Drum rotates to remove the master from the Drum.
50 ms after the Drum 100° during the master removal movement, the Read pulse motor turns ON to feed the original through the ADF unit.

1. Read pulse motor

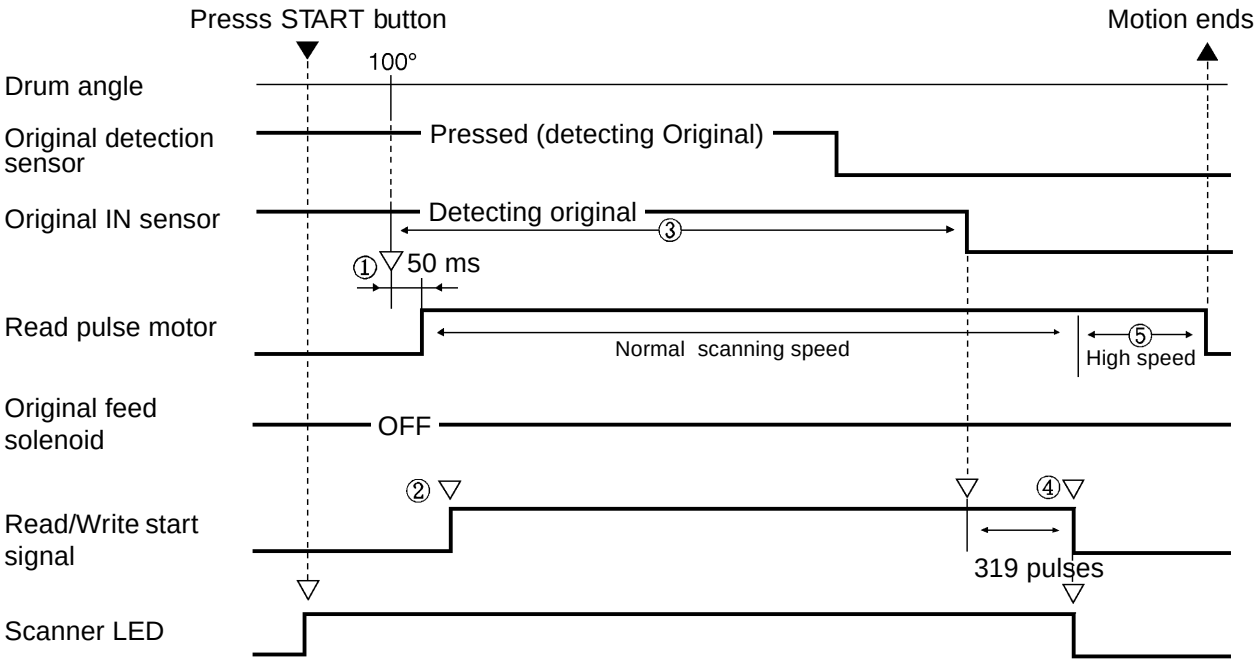
- 50 ms after the Drum 100° during tthe master removal movement, the Read pulse motor activates to rotate the Pickup roller, Stripper roller and Exit roller to feed the Original in and out through the ADF unit.
- 59 pulses (5 mm) after the Read pulse motor is activated, the Read/Write start signal turns ON and the image scanning is started by the Image scanner.

2. Original IN sensor

- When the tailing edge of the Original clears out from the Original IN sensor, the Read/Write start signal is turned OFF after a set time and turns OFF the Image scanner LED to stop the image scanning.
- The Read pulse motor stops after a set time to end the original scanning movement.



Original Scanning Timing Chart



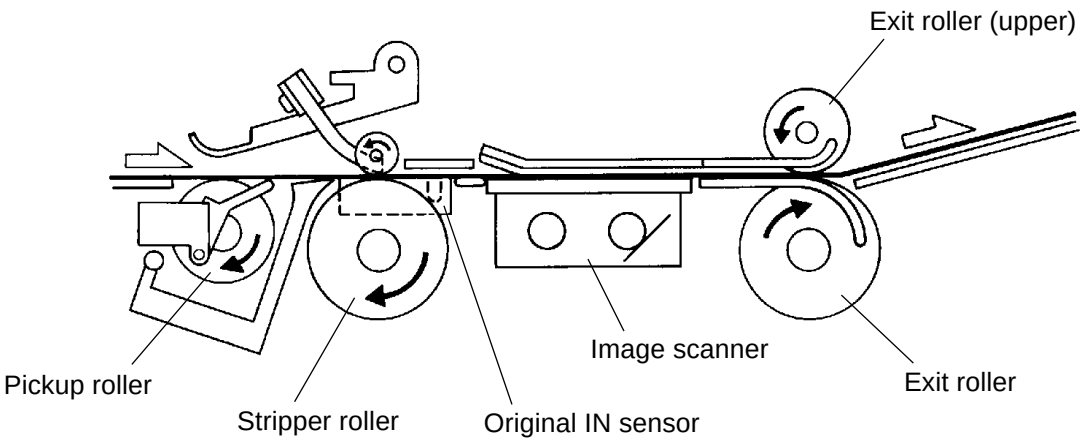
① **50 ms** after the Drum 100° of the master removal movement, the Read pulse motor activates to feed the Original. (At the same time, the Write pulse motor activates to feed the master material.)

② **59 pulses** (5 mm) after the Read pulse motor activates, the Read/Write start signal turns ON and the image scanning starts.

③ If the Original IN sensor still detects the Original (the sensor light is reflected back) even though the Read pulse motor has activated for **4945 pulses**, the machine assumes the Original is oversized and indicates **[C 38]** on the display.

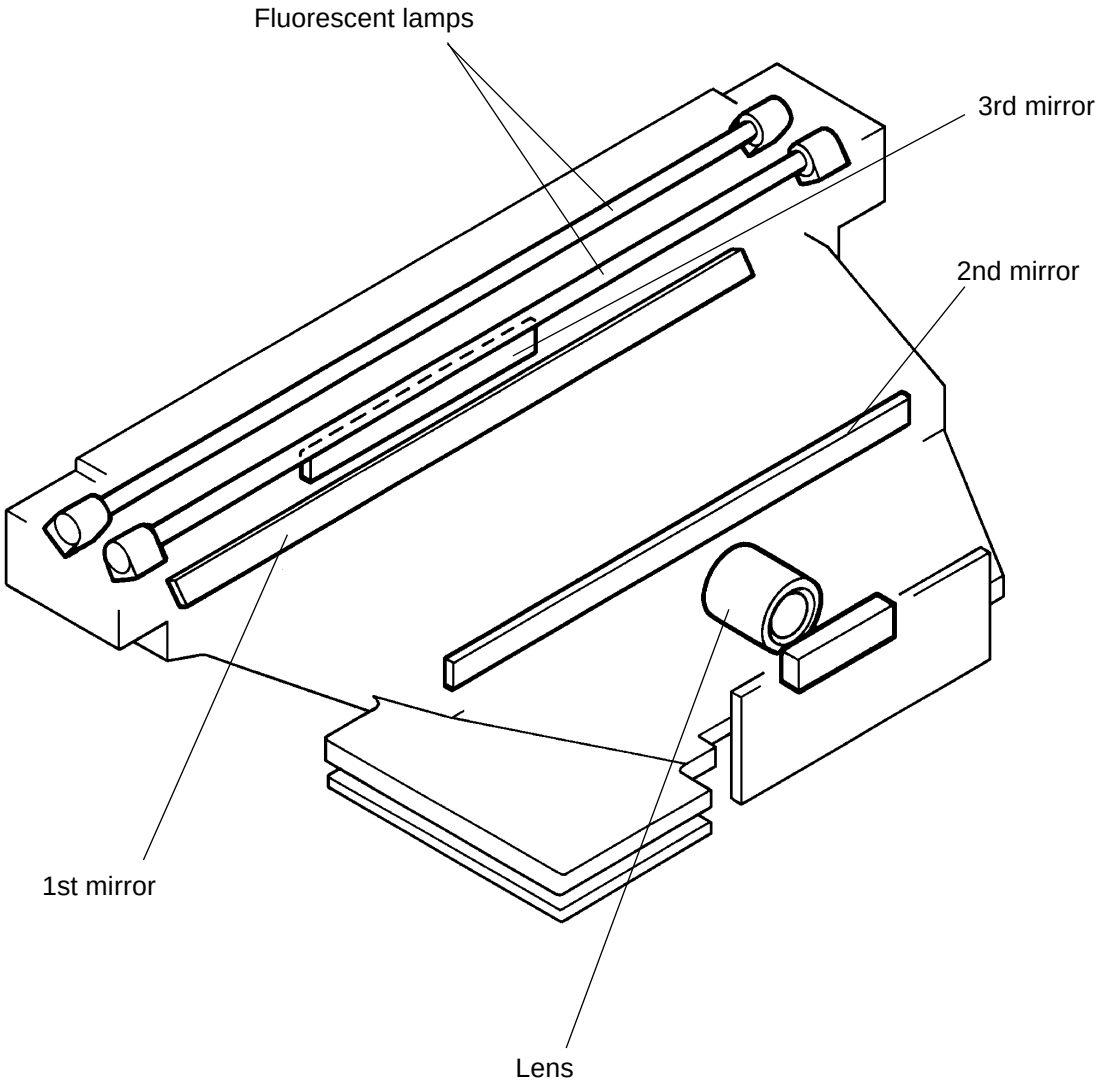
④ Image scanning ends.

⑤ The Read pulse motor rotates at high speed to discharge the Original.

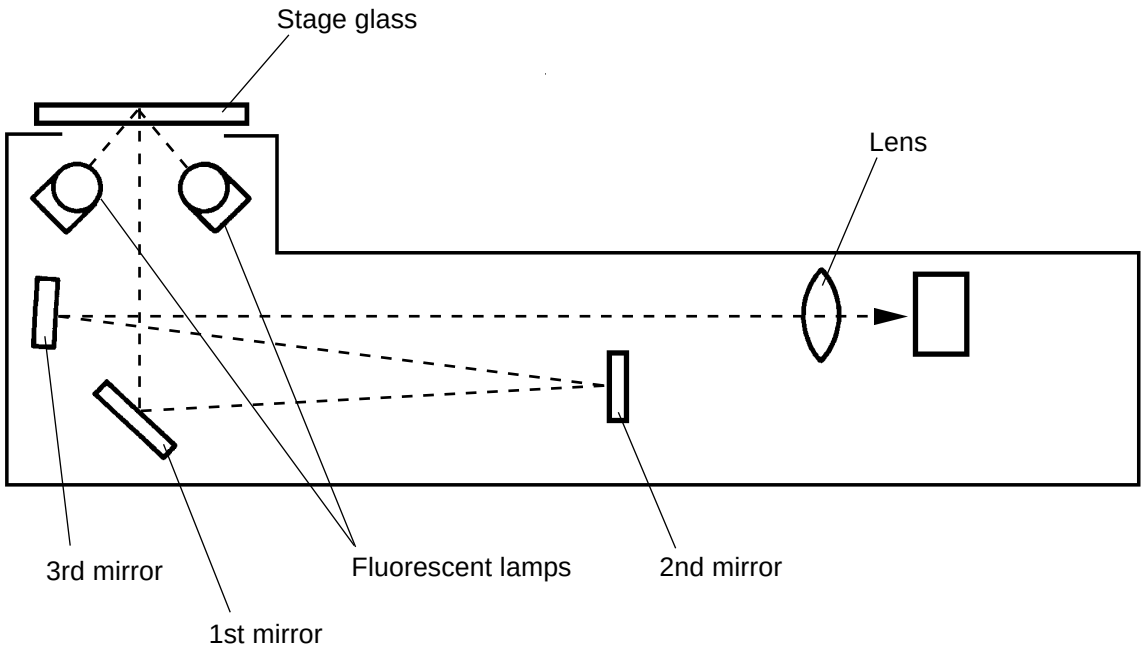
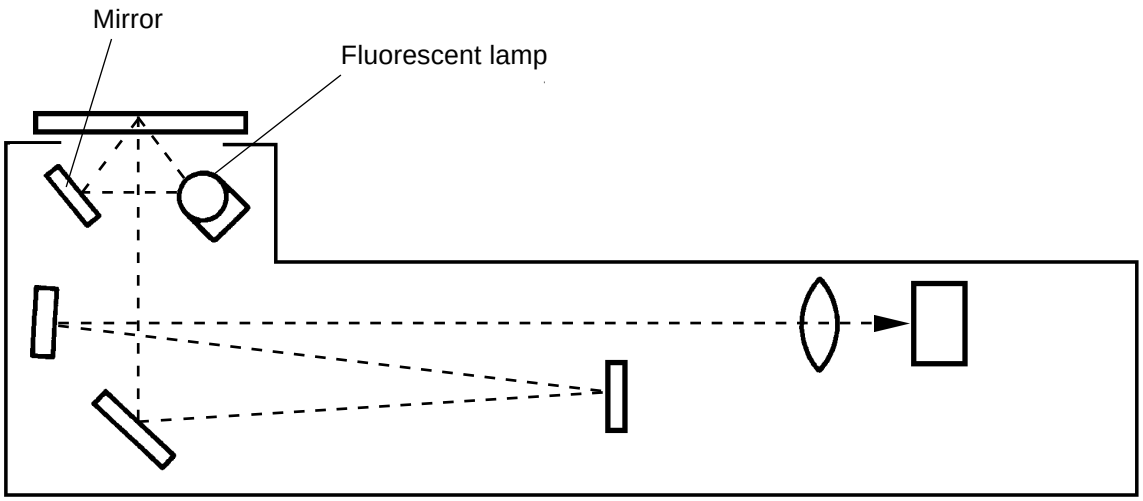


3. Image Scanner

The image scanning is done by an optical type Image scanner which emits greenish-yellow light from fluorescent lamp against an original and catches the image after it is reflected and reduced in size by three mirrors and a lens.
TR1510 has one fluorescent lamp and TR1530 has two fluorescent lamps.



Sectional view of TR1530 Image Scanner



Sectional view of TR1510 Image Scanner